

Request for Additional Information

University of Texas, Austin
Material License SNM-180 Docket No. 70-157

General Information

- GI-1. The Area Map and campus map are difficult to read. Also, the wording on the floor plans is not legible. Consistent with 10 CFR 70.9, provide a clearer image of these items so the wording is readable. Also, mark the location of the Room 2.204 on the diagram of the reactor room.
- GI-2. The term fuel pellets referenced in section 6-I-2 (pg 8) is different than the terminology used in section 4-I-A. Consistent with 10 CFR 70.22(a)(4) clarify that “fuel plugs” (pg3) are the same as “fuel pellets” (pg8).
- GI-3. The third item in section 6-I on page 8 states that the sealed sources may be used in “other laboratory facilities.” This needs clarification since the location of these laboratory facilities is not well defined. Consistent with 70.23(a)(3), modify the section to define by room or building what areas are encompassed within the “other laboratory facilities.”
- GI-4. Section 6-I-4 on page 8 contains a reference to MCZPR fuel elements stored in a “1 by 2 by 9 linear array.” The context for the dimensions of the linear array has not been provided. Consistent with 10 CFR 70.23(a)(3), clarify the units of the dimensions listed for the linear array. Describe the linear array with additional detail to provide understanding of the layout of the fuel elements.

Enclosure

Organization and Administration

- OA-1. Section 5-IV-B on page 6 indicates Laboratory Directors must have three years experience in a “related field.” The section is not clear whether this refers to three years management experience or three years nuclear experience or both. Consistent with 10 CFR 70.23(a)2, modify the submittal to clarify the meaning of “related field.” Specify the individual will have science or engineering background with technical qualifications reviewed by the Radiation Safety Committee.
- OA-2. Section 5-V-A second to last sentence on page 7 states that the Reactor Operator must be pursuing an NRC reactor license. The current language implies every Reactor Operator, even one possessing a license, would have to pursue a reactor license. Consistent with 10 CFR 70.9, modify the requirement from “pursuit” to “possession or pursuit” an NRC reactor license.
- OA-3. The block diagram in appendix A-5 indicates the Health Physicist (HP) reports directly to the Laboratory Director. However, section 5-V-B lacks the commitment that the HP can suspend activities due to safety concerns. Consistent with 10 CFR 70.23(a)4, specify that the individual responsible for the safety program has the authority as safety administrator to suspend activities due to safety concerns.
- OA-4. Although sections 5-II-A page 5, 5-V-B page 7, and section 7-VI page 11 mention training, the renewal does not specify a timeframe for refresher training nor a periodic review of the training program. Consistent with the requirements in 10 CFR 70.22(a)(6), 10 CFR 70.23(a)(2), and RG 8.29 state the method used to evaluate the effectiveness of the training program (written examination, etc.). Incorporate the additional training objective of the principle of ALARA. Provide a commitment for the Reactor Safety Committee, Reactor Oversight Committee, or RSO to review the training program on at least a three year basis. Consider the Standard Review Plan (SRP) 4.4.5.3, #5, which states that training should be done every three years. SRP 11.3.3, # 6, 7, 8, and 10, discuss the effectiveness of the training program.

Radiation Protection

- RP-1. Section 5-II-A, entitled "Duties of the Radiation Safety Officer," contains a summary list of the responsibilities of the RSO. The list implies the RSO conducts periodic reviews of the radiation protection program but does not explicitly state the frequency of the review (e.g., annual).. Consistent with 10 CFR 20.1101(c), specify the frequency of the review (e.g., annually) and state whether or not the findings of the review are given to the Radiation Safety Committee. Describe the role the ALARA Committee plays in the annual review of the radiation protection program.
- RP-2. The structure of the Radiation Protection program is not well defined since the stated responsibilities for several administrative positions overlap. Several different references (pg 5 – "Administrative Structure;" pg 5 – "Radiation Safety Officer;" pg 7 – "Health Physics;" and pg 7 – "Other Laboratory Staff") describe multiple positions including RSO, Laboratory Director, Operator, HP, research associates, technician and students without indicating an administrative structure. Consistent with 10 CFR 70.23(a)2, modify the list of administrative positions in section 5-1 "Administrative Structure" to indicate who is the ultimate authority of the radiation protection program. State who reports to whom in the list of administrative positions in section 5-I and in the list of minimum Laboratory staff in section 5-V-C pg 7. Clarify that the minimum staff list in section 5-V-C pg. 7 represents the basic employment positions at the facility rather than the minimum staff required to be present in order to use the licensed material. In addition the reference to the "Laboratory ALARA Committee" is not well defined. Replace this term with the previously defined "Radiation Safety Committee," or add a description of the Laboratory ALARA Committee to section 5 on page 5.
- RP-3. Section 7-V (pg12) describes the use of RWPs for experiments which may result in significant exposure. The description does not state who reviews or approves these RWPs. Consistent with 10 CFR 20.1101(c), state which function reviews and approves these RWPs.
- RP-4. In section 7-V the last sentence of the second paragraph on page 12 refers to a review of annual dose reports but does not include an annual review of the listed items. Consistent with 10 CFR 20.1101(c), commit to conducting an annual review of the listed items. For example, modify the wording from, "A review of annual dose reports..." to "An annual review of the following: dose reports, ..."
- RP-5. The Health Physics section 5-V-B on page 7 states that knowledge may be acceptable in place of a formal education. The section does not indicate what amount of experience will be equivalent to a year of higher education. Consistent with 10 CFR 70.23(a)2, state a criteria for relating applicable experience to education, see ANSI/ANS 3.1, ANSI/ANS N13.36-2001 and ASTM E 1168-95 for additional information.
- RP-6. The previous license contained a license condition which required all personnel to receive training or be under supervision of trained staff at all times. Section 7-IV pg 11 indicates that all staff and students must complete a formal training program before performing experiments. This commitment does not explicitly cover handling material when being used in situations other than experiments. Consistent with 10 CFR 70.23(a)2, modify the commitment from "working with experiments" to "working with or

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handling licensed nuclear material". (Note: This change will negate the need for a license condition on training.)

- RP-7. Section 6-III 3rd paragraph pg. 9 provides a commitment to maintain portable survey equipment in calibration. The section does not provide a time frame for calibrating the equipment. Consistent with 20.1501(b), specify a timeframe for calibrating the survey instruments. For example, state that calibration will be conducted in accordance with the manufactures specifications.
- RP-8. In section 6-III, the fourth paragraph, on page 9 refers to local area radiation monitors and a continuous air monitor in the reactor room. (Note commitment in section 7-II-C pg 11). The section is not clear as to whether room 1.104 is covered by these monitors. Consistent with 10 CFR 20.1501(a)(2)(i), in the second sentence of the fourth paragraph add "including room 1.104" following the "reactor room" to clarify that the non-critical assembly will also be covered by these monitors.
- RP-9. Section 6-III page 9 describes the licensees monitoring program. No indication is provided of actions to be taken if an exposure exceeds an administrative limit. Consistent with 10 CFR 20.1201(a), state that procedures require elevated exposures above some administrative limit (for example 10% of annual limits) to be reported to the HP or RSO for follow-up.
- RP-10. Section 6-IV page 9-10 indicates that handling of the subcritical assembly or activated foils may result in contamination of gloves and tools. The application does not describe any required personnel contamination surveys for individuals leaving the Laboratory. Consistent with 10 CFR 20.1501(a)(2)(i), (ii), & (iii), describe the access control program that ensures signs, labels, and other access controls are properly posted and operative. Describe personnel contamination survey, (e.g. frisk) requirements for individuals leaving the Laboratory. Indicate that individuals who handled portions of the subcritical assembly, activated foils, or sources must survey their hands. State procedures exist to define contamination action levels and followup by the HP or RSO, and indicate that individuals are aware of the procedures.

Criticality Safety

- CS-1. State how the criticality accident alarm system (CAAS) will be established and maintained to initiate personnel protective actions in the event of inadvertent criticality, such as by following ANSI/ANS-8.3-1997, "Criticality Accident Alarm System (CAAS)," as modified by NRC Regulatory Guide 3.71, Revision 1, dated October 2005. If the standard will not be used, demonstrate that an alternative provides the at least the same level of safety as provided by the standards and regulatory guide.

10 CFR 70.22(a)(7) states that the license application must contain a description of the equipment and facilities which will be used by the applicant to protect health and minimize danger to life or property and 10CFR70.24 states that the licensee shall maintain emergency procedures for each area in which the licensed special nuclear material is handled, used, or stored to ensure that all personnel withdraw to an area of safety upon the sounding of the alarm.

- CS-2. State the criteria for emergency planning and response to a nuclear criticality accident for facilities outside reactors that process, store, or handle fissionable material, such as by following ANSI/ANS-8.23-2007, "Nuclear Criticality Accident Emergency Planning and Response." If the standard is not used, discuss how the alternative achieves the at least the same level of safety as the standard.

10 CFR 70.22(a)(7) states that the license application must contain a description of the equipment and facilities which will be used by the applicant to protect health and minimize danger to life or property and 70.22(a)(8) states that the license application must contain proposed procedures to protect health and minimize danger to life or property.

- CS-3. State the provisions for the CAAS to be out of service (OOS), an OOS period limitation and compensatory measures while the CAAS is OOS. *According to* the CAAS requirements in 10 CFR 70.24, address the following:

(a) State how a CAAS is designed to remain operational during credible events, such as a seismic shock equivalent to the site-specific design basis earthquake or the equivalent value specified by the Uniform Building Code.

(b) State how a CAAS is designed to remain operational during credible events such as a fire, an explosion, a corrosive atmosphere, and other credible conditions.

(c) State the *use* of fixed and personnel accident dosimeters in areas that require a CAAS.

(e) State how a CAAS alarm is clearly audible in areas that must be evacuated. Alternatively, discuss other notification methods that are effective in notifying personnel that evacuation is necessary.

(f) State how emergency power for the CAAS is provided. Alternatively, justify the use of continuous monitoring with portable instruments.

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10 CFR 70.24 states that the licensee shall maintain emergency procedures for each area in which the licensed special nuclear material is handled, used, or stored to ensure that all personnel withdraw to an area of safety upon the sounding of the alarm. Consider section 5.4.3.4.3 of the Standard Review Plan (SRP), which states that the applicant should commit to rendering operations safe, by shutdown and quarantine if necessary, in any area where CAAS coverage has not been lost and not restored within a specified number of hours.

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Fire Safety

10 CFR 70.22(a)(7) states that the license application must contain a description of the equipment and facilities which will be used by the applicant to protect health and minimize danger to life or property and 70.22(a)(8) states that the license application must contain proposed procedures to protect health and minimize danger to life or property. In order to demonstrate compliance with the above regulations regarding fire safety, please provide the following information.

- FS-1. Describe the facility's building construction, fire area determination, electrical installation, life safety/egress, ventilation, and lightning protection.
- FS-2. Describe the facility's fire prevention features (suppression, alarm, detection, fire rated walls/opening protection).
- FS-3. Describe any inspection, testing, and maintenance of fire protection systems.
- FS-4. Describe, by fire area, any potential fuel loading, possible fire scenarios, the potential consequences, and any mitigative controls.
- FS-5. Specify any hazardous chemicals or processes used which contribute to the fire hazards affecting radiological areas.
- FS-6. State whether or not the facility is compliant with NFPA 45, Standard for Fire Protection in Laboratory Facilities.
- FS-7. Describe the City of Austin's Fire Department's qualifications and training. Describe any pre-fire plan coordination with the City of Austin Fire Department (fire drills, Haz Mat preparation, etc).

Emergency Plan

- EP-1. The application only has Emergency Action Levels (EACs) at the Unusual Event level. Consistent with the requirements in 10 CFR 70.22(h)(2)(i)(1)(ii), justify that EALs for the other levels such as alerts and site area emergencies are not credible for the facility; particularly regarding security issues. Consider U.S. NRC, "Standard Review Plan for the Review and Evaluation of Emergency Plans for Research and Test Reactors", NUREG-0849 (ADAMS Accession No. ML062190191), Chapter 4 page 10, first paragraph.

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Decommissioning and Financial Assurance

DE-1. Section 10, page 13 of the license application states that decommissioning costs for the facility are estimated to be less than \$50,000. However, the application does not explain the basis for this cost estimate. In addition, the license applications does not include any certification demonstrating that the either the University of Texas at Austin or the State of Texas will be responsible for providing the funds necessary to decommission the facility. Provide the basis for the decommissioning cost estimate, as well as a certification from either the University of Texas at Austin or the State of Texas demonstrating that the funds will be available, when needed, to decommission the facility. This information is necessary to demonstrate compliance with the requirements in 10 CFR 70.25 (f)(4) and 70.25 (g)(4).